

Application No.: 10/632,499
Filed: August 1, 2003
Reply dated: November 15, 2007
Reply to Office Action of August 27, 2007

REMARKS/ARGUMENTS

Claims 1-11 are pending in this application. Claims 1-11 had been rejected.

Claims 1-5, 7-9 and 11 had been rejected under 35 U.S.C. §102(e) over Fogg (US Patent 6,466,624 B1). This rejection is respectfully traversed for the following reasons.

It is well established that a claim is anticipated under 35 U.S.C. §102, only if each and every element of the claim is found in a single prior art reference.¹ Moreover, to anticipate a claim under 35 U.S.C. §102, a single source must contain each and every element of the claim "arranged as in the claim."^{2,3} Missing elements may not be supplied by the knowledge of one skilled in the art or the disclosure of another reference.⁴ If each and every element of a claim is not found in a single reference, there can be no anticipation.

Fogg describes a device for enhancing the quality of output of a decoder processing a "standard-coded digital video signal" (col. 3 line 50) "source bitstream" of Fig. 6. The video signal encodes a sequence of original pre-encode images or "frames" acquired outside of the Fogg's device.

Fogg produces reconstructed frames from the encoded video data (col. 15, lines 8-26); however, it is important to note that the decoded images are different from the original images: "the decoded picture serves as an initial estimate of the original (i.e. pre-encode) picture" (col. 16, lines 9-11). The decoded images are inherently different from the original acquired images because of the unavoidable data alteration introduced by compression during encoding and decoding.

¹ Verdegall Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987).

² Structural Rubber Prods. Co. v. Park Rubber Co., 749 F.2d 707, 716, 223 U.S.P.Q. 1264, 1271 (Fed. Cir. 1984).

³ Lewmar Marine Inc. v. Barient, Inc., 827 F.2d 744, 747, 3 U.S.P.Q. 2d 1766, 1768 (Fed. Cir. 1987), cert. denied, 484 U.S. 1007 (1988).

⁴ Titanium Metals Corp. v. Banner, 778 F.2d 775, 780, 227 U.S.P.Q. 773, 777 (Fed. Cir. 1985).

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Fogg also obtains pixel motion trajectories using pixel motion data inherent in the encoded signal's format, such as MPEG. Subsequently, Fogg performs enhancement of the decoded images using filters along the pixel motion trajectories.

The present invention uses "a detector unit for acquiring a plurality of images" (see paragraph [0011]); the detector unit may be "equipped with a video system or a CCD sensor for acquiring images" (see paragraph [0024]).

In other words, the acquired images are images acquired by a detector unit, a video system, or a CCD sensor from a specimen, as opposed to images formed by processing (e. g., single- or multi-stage filtering, compressing, decompressing, reconstruction, enhancing, etc.) of acquired images.

Contrary to Fogg, in the present invention the filters operate on acquired images along the trajectories calculated using the acquired images.

Examiner states that Fogg discloses determining a respective displacement vector from acquired images; see pending Office Action, page 3, lines 5-9, where Examiner equates acquired images of the present invention with numerals 811 and 812 in Fig. 8B of Fogg.

Applicant respectfully disagrees. Numerals 811 and 812 of Fogg are frames processed within the bitstream processor 622 (see col. 13, lines 24-27 and 4-9), as may be seen in Fig. 6; these frames reside in the buffers 612 and 613; and therefore these frames are produced by the bitstream parser 621, which takes as input a source bitstream (passing through input buffer 611, Fig. 6).

Fogg's disclosure assumes that the source bitstream is different from acquired images, because image restoration is one of the tasks of the Fogg's invention; see, for example, col. 9, line 52, col. 21, line 45. It is the very lack of access to acquired images (in combination with access to the source bitstream) that makes the task of image restoration necessary for Fogg.

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Further, Fogg's disclosure uses encoding MPEG-2 as a typical example of the source bitstream format (see col. 13, line 21, or col. 7, lines 2-6); MPEG-2 format loses information in the process of encoding and, therefore, makes the source bitstream inherently and irrecoverably different from acquired images. Other suggested formats in Fogg, such as MPEG-1 and MPEG-4, also lose information in the process of encoding.

Therefore, frames 811 and 812 of Fogg, which are derived from the source bitstream of Fogg cannot be called acquired images.

Examiner states that Fogg discloses determining a trajectory for each pixel of acquired images (Fig. 10C, numeral 1026, col. 18, line 40, and col. 15, line 51), pending Office Action, lines 10-12.

Applicant respectfully disagrees. The parts of Fogg's disclosure referenced by Examiner in the aforementioned part of the Office Action all refer to operations performed by the motion analyzer 606, Fig. 6. As may be seen from Fig. 6 of Fogg, all image data that the motion analyzer 606 has access to (such as reconstructed frames 652) ultimately derive from the source bitstream.

As shown above, the source bitstream of Fogg and data derived from it, such as data operated upon by the motion analyzer 606, cannot be called acquired images and Fogg does not disclose determining a trajectory for each pixel of acquired images in Fig. 10C, numeral 1026, col. 18, line 40, or col. 15, line 51.

Examiner states that Fogg discloses applying an operation (Fig. 11F, numeral 1054) to the acquired images (corresponding to "multiple frames" in col. 18, line 41).

Applicant respectfully disagrees. The parts of Fogg's disclosure referenced by Examiner in the aforementioned part of the Office Action all refer to operations performed by the motion analyzer 606 and the spatial analyzer 607, Fig. 6. As may be seen from Fig. 6 of Fogg, all image data that the motion analyzer 606 and the spatial analyzer 607 have access to (such as reconstructed frames 652) ultimately derive from the source bitstream.

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As shown above, the source bitstream of Fogg and data derived from it, such as data operated upon by the motion analyzer 606 and the spatial analyzer 607, cannot be called acquired images and Fogg does not disclose applying an operation to the acquired images in Fig. 11F, numeral 1054, or col. 18, line 41.

Examiner states that Fogg discloses a "method for optimizing the image quality of movable subjects imaged with a microscope system" (pending Office Action, page 3, lines 1-2). Applicant respectfully disagrees: microscopes or microscopy are not mentioned, implied, or suggested in Fogg.

Claim 1 is a method for optimizing the image quality of movable subjects imaged with a microscope system comprising determining a respective displacement vector from the acquired images and trajectory for pixels of the acquired images and applying an operation to the same acquired images along the trajectory. This combination of elements is not found in Fogg or in any other publication cited by the Examiner in this Office Action. Therefore, Claim 1 is patentable over Fogg under 35 U.S.C. §102(e) and should be allowed.

The above-presented argument also supports patentability of Claims 2-5, 7-9 and 11. Allowance of the referenced Claims is respectfully solicited.

Claims 6 and 10 had been rejected under 35 U.S.C. §103(a) over Fogg in view of Nybo et al. (US Patent Application Publication No. US 2001/0052933 A1). This rejection is respectfully traversed for the following reasons.

For an obviousness rejection to be proper, the Patent Office must meet the burden of establishing a prima facie case of obviousness. The Patent Office must meet the burden of establishing that all elements of the invention are disclosed in the cited publications, which must have a suggestion, teaching or motivation for one of ordinary skill in the art to modify a reference or combined references.⁵ The cited publications

⁵ In re Lee, 277 F.3d 1338, 61 U.S.P.Q.2d 1430 (Fed. Cir. 2002).

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should explicitly provide a reasonable expectation of success, determined from the position of one of ordinary skill in the art at the time the invention was made."

Claims 6 and 10 comprise the elements of determining a respective displacement vector from the acquired images and trajectory for pixels of the acquired images and applying an operation to the same acquired images along the trajectory. As described above, this combination of elements is not taught or suggested in Fogg or Nybo or their combination. Therefore, Claims 6 and 10 are patentable over Fogg in view of Nybo under 35 U.S.C. §103(a) and should be allowed.

It is believed that the present application is in condition for allowance. A Notice of Allowance is respectfully solicited in this case. Should any questions arise, the Examiner is encouraged to contact the undersigned.

Respectfully submitted.

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⁶ In re Fine, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); In re Wilson, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); Amgen v. Chugai Pharmaceuticals Co., 18 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996).